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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/678,710	10/03/2003	Chuan-Yi Lin	TSM03-0499	9881
25962	7590	04/07/2004	EXAMINER	
SLATER & MATSIL, L.L.P. 17950 PRESTON RD, SUITE 1000 DALLAS, TX 75252-5793			ROCCHIGIANI, RENZO	
			ART UNIT	PAPER NUMBER
			2825	

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/678,710

Applicant(s)

LIN ET AL.

Examiner

Renzo N. Rocchegiani

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) ☒ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) ☐ Notice of Informal Patent Application (PTO-152) |
| 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/03/2003</u> . | 6) ☐ Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 7-8, 10, 12-14, 16-23, 25-33 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,204,103 B1 (Bai et al.).

Bai et al. discloses a process to make a CMOS device comprising one step of siliciding a first source and drain region of a first transistor (item 1506, 1507 and col. 6, lines 40-44) on a substrate (item 1501) and one step of siliciding a second source and drain region of a second transistor (item 1540, 1536 and col. 6, lines 40-47) on a substrate, forming a dielectric layer (item 150) on the first and second source and drain regions, and siliciding the gate electrodes of the first and second transistors (Fig. 17-18), wherein the first gate electrode is fully silicided with TiSi₂ (item 1602) and the second gate electrode is fully silicided with MoSi₂ (Fig. 19). Furthermore, Bai et al. disclose partial silicidation of the gate electrodes during the silicidation of the respective source and drain regions (Fig. 15, items 1505 and 1532). The silicidation steps are performed by depositing a metal layer and then annealing. (col. 5, lines 38-50). Also, the first transistor's source and drain regions are silicided with the a metal different from the metal used to silicide the source and drain regions of the second transistor. (col. 5,

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lines 63-67 and col. 6, lines 1-5, wherein it is stated that the doped regions have work functions similar to those of their respective gates.)

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6, 9 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,204,103 B1 (Bai et al.).

As stated in paragraph 2, all the limitations of these claims have been met except for teaching that the metal layers used to form the silicides may comprise a plurality of layers.

While Bai et al. only discloses a single layer of metal for the formation of the silicide it would have been obvious to one with ordinary skill in the art to deposit a plurality of layers as opposed to a single thick layer of metal to form the silicide, since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlichman*, 168 USPQ 177, 179.

5. Claims 11 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,204,103 B1 (Bai et al.) in view of U.S. Patent No. 6,150,243 (Wieczorek et al.).

As stated in paragraph 2, all the limitations of these claims have been met

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except for teaching that the first dielectric material formed on the source and drain region may comprise a SiN or a SiON.

Wieczorek et al. teach the formation of sidewall spacers over source and drain regions using silicon nitride or silicon oxynitride. (col. 6, lines 5-15).

It would have been obvious to form the sidewall spacers of silicon nitride or silicon oxynitride, since Wieczorek et al. teaches that these are well known materials used in the art to form sidewall spacers and since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renzo Rocchegiani whose telephone number is (571) 272-1904. The examiner can normally be reached on Monday through Friday from 8:30 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith, can be reached at (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

RNR

April 1, 2004



MATTHEW SMITH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800